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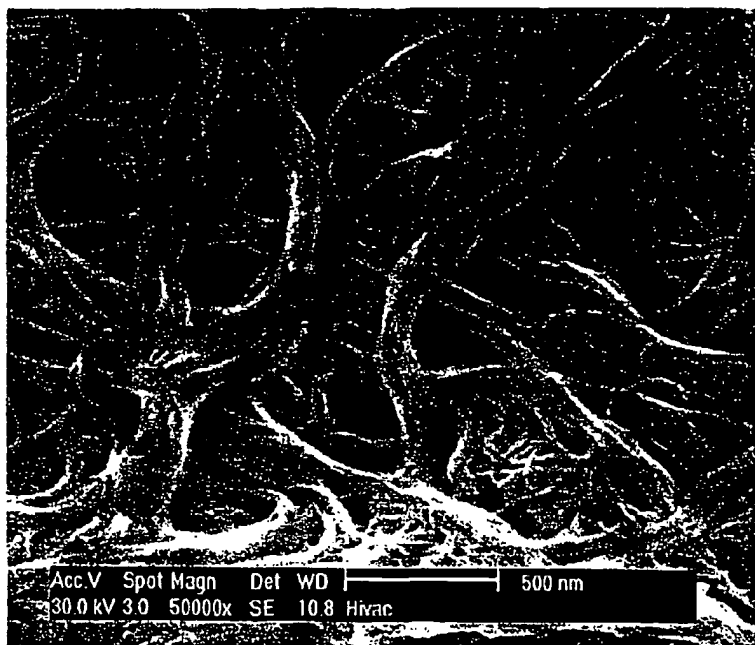
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(54) Title: **MACROSCOPIC ORDERED ASSEMBLY OF CARBON NANOTUBES**



Macroscopic Ropes formed by treating SWNT with oleum
nanotubes, each of which is aligned in the same direction and in contact with its nearest neighbors. An ordered assembly of closest SWNT also serves as a template for growth of more and larger ordered assemblies. An ordered assembly further serves as a foundation for post processing treatments that modify the assembly internally to specifically enhance selected material properties such as shear strength, tensile strength, compressive strength, toughness, electrical conductivity, and thermal conductivity.

(57) Abstract: The present invention is directed to the creation of macroscopic materials and objects comprising aligned nanotube segments. The invention entails aligning single-wall carbon nanotube (SWNT) segments that are suspended in a fluid medium and then removing the aligned segments from suspension in a way that macroscopic, ordered assemblies of SWNT are formed. The invention is further directed to controlling the natural proclivity of nanotube segments to self assemble into ordered structures by modifying the environment of the nanotubes and the history of that environment prior to and during the process. The materials and objects are "macroscopic" in that they are large enough to be seen without the aid of a microscope or of the dimensions of such objects. These macroscopic, ordered SWNT materials and objects have the remarkable physical, electrical, and chemical properties that SWNT exhibit on the microscopic scale because they are comprised of

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